

This Listing of Claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-7 (cancelled)

Claim 8 (Previously Presented) A data storage system, comprising:

- a source of heat;
- a substrate;
- a write layer disposed above the substrate;
- a copy layer disposed above the write layer; and
- a flying head disposed above the layers and carrying the source of heat for heating a selected spot on the copy and write layers, wherein the write layer comprises a ferromagnetic material selected to have a high coercivity at room temperature and a very high write temperature T_{write} and the copy layer comprises a ferromagnetic material selected to have a coercivity always less than the coercivity of the write layer at the same temperature and a copy temperature T_{copy} , substantially less than the write temperature of the write layer; wherein the copy layer is deposited over the write layer by the steps of depositing first the write layer of TbFeCo, and then depositing a copy layer of Co/Pt, and wherein the step of depositing the Co/Pt comprises depositing 0.3 nm Co/1.0 nm Pt repeated 13 times.

Claim 9 (Original) A system as claimed in claim 8 wherein the Co/Pt superlattice is fabricated by DC magnetron Co sputtering from elemental Co and Pt targets onto a rotating substrate.

Claim 10 (Original) A system as claimed in claim 9 wherein a Pt layer is used to promote the desired polycrystalline texture of the Co/Pt superlattice copy layer.

Claim 11 (Original) A system as claimed in claim 9 wherein the TbFeCo composition is approximately Tb₂₄Fe₆₉Co₇ atomic per cent.

Claim 12 (Previously Presented) A system as claimed in claim 8 wherein the write layer comprises TbFeCo, and the copy layer comprises Fe/Pt super lattice.

Claim 13 (Previously Presented) A system as claimed in claim 8 wherein the write layer comprises TbFeCo, and the copy layer comprises CoFe/Pt super lattice.

Claim 14 (Previously Presented) A system as claimed in claim 8 wherein the system comprises a rotating disc rotating past the flying head and comprising a plurality of concentric lands separated by grooves, each of the lands supporting a data track wherein the data is stored and being approximately, or substantially the width of the spot defined by the source of heat, each of the lands comprising the substrate and the copy layer and write layer, and wherein the side walls of the lands each have a diminished thickness of the copy layer and the write layer relative to the land.

Claim 15 (Original) A system as claimed in claim 14 further comprising a polycarbonate substrate, and dielectric and reflector layers underlying the copy layer and write layer.

Claim 16 (Previously Presented) A system as claimed in claim 15 wherein the write layer comprises TbFeCo, and the copy layer comprises Co/Pt.

Claim 17 (Previously Presented) A system as claimed in claim 16 further comprising a layer of Pt intermediate the copy layer and write layer for mediating the coupling between these layers.

Claim 18 (Previously Presented) A data storage system comprising a spot size source of heat directed at a rotating disc having a plurality of data storage disc tracks thereon, the disc comprising a substrate, a write layer disposed above the substrate and a copy layer disposed

above the write layer the system comprising a flying head disposed above the copy layer and write layer and carrying thereon the source of heat for heating a selected spot on the copy layer and write layer for reading data from the write layer, and wherein the write layer comprises means having a high coercivity at room temperature and a high write temperature wherein the coercivity is low enough to accurately write data on the write layer, and wherein the copy layer comprises means always having a lower coercivity than the write layer at a given temperature, and responsive to a certain defined temperature substantially less than the write temperature of the write layer to be coupled to the write layer and store a data bit already stored in the write layer inset copy layer without destroying the status of the data bit stored in the write layer.

Claim 19 (Previously Presented) A system as claimed in claim 8, wherein the write layer comprises TbFeCo and the copy layer comprises Co/Pt.

Claim 20 (Previously Presented) A system as claimed in claim 19 further comprising an additional inner layer intermediate the copy layer and the write layer to mediate the coupling between the layers.

Claim 21 (Previously Presented) A system as claimed in claim 20, wherein the inner layer comprises Pt.

Claim 22 (Previously Presented) A system as claimed in claim 21 wherein the inner layer comprises a thickness less than or equal to 5 nm.

Claim 23 (Previously Presented) A system as claimed in claim 22, wherein the inner layer is 0.5 to 1.0 nm.

Claim 24 (Currently Amended) A data storage system, comprising:
a source of heat;
a substrate;
a write layer disposed above the substrate;

a copy layer disposed above the write layer; and
a flying head disposed above the layers and carrying the source of heat for heating a selected spot on the copy and write layers, wherein the write layer comprises a ferromagnetic material ~~selected to have~~ having a high coercivity at room temperature and a high write temperature T_{write} , and the copy layer comprises a ferromagnetic material ~~selected to have~~ having a coercivity always less than the coercivity of the write layer at the same temperature and a copy temperature T_{copy} substantially less than the write temperature of the write layer.

Claim 25 (Currently Amended) A system as claimed in claim 24 wherein the write layer comprises TbFeCo, which is amorphous, and the copy layer comprises Co/Pt, which is polycrystalline.

Claim 26 (Previously Presented) A system as claimed in claim 25 further comprising an additional inner layer intermediate the copy layer and the write layer to mediate the coupling between the layers.

Claim 27 (Previously Presented) A system as claimed in claim 26 wherein the inner layer comprises Pt.

Claim 28 (Previously Presented) A system as claimed in claim 27 wherein the inner layer comprises a thickness less than or equal to 5 nm.

Claim 29 (Previously Presented) A system as claimed in claim 28 wherein the inner layer is 0.5 to 1.0 nm.

Claim 30 (Previously Presented) A system as claimed in claim 24 wherein the copy layer is deposited over the write layer by the steps of depositing first the write layer of TbFeCo, and then depositing a copy layer of Co/Pt.

Claim 31 (Previously Presented) A system as claimed in claim 30 wherein the step of depositing the Co/Pt comprises depositing 0.3 nm Co/1.0 nm Pt repeated 13 times, and wherein the Co/Pt superlattice is fabricated by DC magnetron Co sputtering from elemental Co and Pt targets onto a rotating substrate.

Claim 32 (Previously Presented) A system as claimed in claim 31 wherein a Pt layer is used to promote the desired polycrystalline texture of the Co/Pt superlattice copy layer.

Claim 33 (Previously Presented) A system as claimed in claim 31 wherein the TbFeCo composition is approximately Tb₂₄Fe₆₉Co₇ atomic per cent.

Claim 34 (Previously Presented) A system as claimed in claim 30 wherein the write layer comprises TbFeCo, and the copy layer comprises Fe/Pt super lattice.

Claim 35 (Previously Presented) A system as claimed in claim 30 wherein the write layer comprises TbFeCo, and the copy layer comprises CoFe/Pt super lattice.

Claim 36 (Previously Presented) A system as claimed in claim 24 further comprising a polycarbonate substrate, and dielectric and reflector layers underlying the copy layer and write layer.

Claim 37 (Previously Presented) A system as claimed in claim 36 wherein the write layer comprises TbFeCo, and the copy layer comprises Co/Pt.

Claim 38 (Previously Presented) A system as claimed in claim 37 further comprising a layer of Pt intermediate the copy layer and write layer for mediating the coupling between these layers.

Claim 39 (Previously Presented) A system as claimed in claim 8, wherein the copy layer has a coercivity between 1-2kOe.

Claim 40 (Previously Presented) A system as claimed in claim 18, wherein the copy layer has a coercivity between 1-2kOe.

Claim 41 (Previously Presented) A system as claimed in claim 24, wherein the copy layer has a coercivity between 1-2kOe.

Claim 42 (Previously Presented) A system as claimed in claim 18 wherein the write layer comprises TbFeCo and the copy layer comprises Co/Pt.

Claim 43 (Previously Presented) A system as claimed in claim 42 further comprising an additional inner layer intermediate the copy layer and the write layer to mediate the coupling between the layers.

Claim 44 (Previously Presented) A system as claimed in claim 43 wherein the inner layer comprises Pt.

Claim 45 (Previously Presented) A system as claimed in claim 44 wherein the inner layer comprises a thickness less than or equal to 5 nm.

Claim 46 (Previously Presented) A system as claimed in claim 45 wherein the inner layer is 0.5 to 1.0 nm.

Claim 47 (Previously Presented) A system as claimed in claim 18 wherein the copy layer is deposited over the write layer by the steps of depositing first the write layer of TbFeCo, and then depositing a copy layer of Co/Pt.

Claim 48 (Previously Presented) A system as claimed in claim 47 wherein the step of depositing the Co/Pt comprises depositing 0.3 nm Co/1.0 nm Pt repeated 13 times.

Claim 49 (Previously Presented) A system as claimed in claim 48 wherein the Co/Pt superlattice is fabricated by DC magnetron Co sputtering from elemental Co and Pt targets onto a rotating substrate.

Claim 50 (Previously Presented) A system as claimed in claim 49 wherein a Pt layer is used to promote the desired polycrystalline texture of the Co/Pt superlattice copy layer.

Claim 51 (Previously Presented) A system as claimed in claim 49 wherein the TbFeCo composition is approximately $\text{Tb}_{24}\text{Fe}_{69}\text{Co}_7$ atomic per cent.

Claim 52 (Previously Presented) A system as claimed in claim 48 wherein the write layer comprises TbFeCo, and the copy layer comprises Fe/Pt super lattice.

Claim 53 (Previously presented) A system as claimed in claim 48 wherein the write layer comprises TbFeCo, and the copy layer comprises CoFe/Pt super lattice.

Claim 54 (Previously presented) A system as claimed in claim 18 wherein the system comprises a rotating disc rotating past the flying head and comprising a plurality of concentric lands separated by grooves, each of the lands supporting a data track wherein the data is stored and being approximately, or substantially the width of the spot defined by the source of heat, each of the lands comprising the substrate and the copy layer and write layer, and wherein the side walls of the lands each have a diminished thickness of the copy layer and the write layer relative to the land.

Claim 55 (Previously presented) A system as claimed in claim 54 further comprising a polycarbonate substrate, and dielectric and reflector layers underlying the copy layer and write layer.

Claim 56 (Previously presented) A system as claimed in claim 55 wherein the write layer comprises TbFeCo, and the copy layer comprises Co/Pt.

Claim 57 (Previously presented) A system as claimed in claim 56 further comprising a layer of Pt intermediate the copy layer and write layer for mediating the coupling between these layers.